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The Potential of Living Plants Harnessing Bio-Electricity using Bio-Photovoltaic Device Technology

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The present study, Designed and constructed the low-cost and eco-friendly bio-photovoltaic (BPVs) device technology by using biological materials. The production of green electricity from BPVs device helpful in the reduction of environmental pollution as compared to fossil fuel energy generation. The BPVs device is the unique properties of plant-microbes relationship in the rhizosphere region of a plant and converts solar energy into electrical energy *via* photosynthesis process. This is a sub-disciplinary subject of Plant-Microbial Fuel Cell and Microbial Fuel Cell. Bio-Photovoltaic device (BPVs) is prepared for the electricity produced through the organic framework which *Cynodon dactylon* (grass) and electrochemical active bacteria (EAB) by the mechanism of bioelectrochemical device. This means that they convert chemical energy into green electricity with the assistance of biological materials as shown in Figure 1. It was found that the single chamber of the BPVs device with grass and without grass (control) appeared under the environmental condition was observed voltage. The potential difference was estimated with maximum voltage produced 0.54 to 0.61 ±2 Volts at 10 days of incubation period. While the other set of without grass recorded was power output 0.34±2V at 10 days respectively. Further, to formulate in the grass *e*-table setup in BPVs device for production of green electricity. The Gras *e*-table consisted of 12 BPVs device pots with an arrangement of parallel and series connectivity in complete circuits. It was recorded that maximum potential of 4.24 ± 0.2 Volts was produced in 30 days of the incubation period. The aim of the present study focused on harnessing bioelectricity using bio-photovoltaic device which also resolves energy crisis issues at present time and providing sustainable energy without harming the plants and environment.

Key-words: Bio-Photovoltaic Device, *Cynodon dactylon*; Grass *e*-table; Renewable Electricity.